

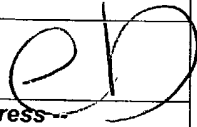


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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,627	12/27/2001	Makoto Kato	217774US0X	7741
22850	7590	07/02/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			RONESI, VICKEY M	
			ART UNIT	PAPER NUMBER
			1714	
DATE MAILED: 07/02/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/026,627	<b>Applicant(s)</b> KATO ET AL.	
	<b>Examiner</b> Vickey Ronesi	<b>Art Unit</b> 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/26/02, 2/28/03, 8/18/03</u> | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Resin Composite Material Containing Polyphenylene Oxide and a Layered Clay Mineral."

### *Claim Rejections - 35 USC § 103*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, and 5 are rejected under 35 U.S.C. 103 as being unpatentable over Kato et al (JP 2000-169,634) in view of Usuki et al (US 5,973,053). A machine translation of Kato et al is being referenced in this first action; a full translation has been ordered.

With respect to claims 1 and 5, Kato et al '634 discloses a resin composite material composition comprising a polar thermoplastic resin and a layered clay organized with an organizing agent, i.e., an organic onium ion (0001). In particular, the thermoplastic resin is most preferably polyphenylene oxide (0026). Kato et al '634 discloses that the resin composite material is produced by dispersing the organized clay into the thermoplastic (0033, 0034)

Kato et al '634 is silent with respect to the addition of a polar compound that is chemically bonded to the layered clay mineral but discloses that the excellent mechanical properties observed with the invention arises from the delaminating of the clay layers and their distribution into the thermoplastic matrix which restrains the movement of the polymer molecule.

Usuki et al teaches the use of an organized layered clay mineral that is chemically bonded to a polar compound, whose presence is needed in order to gain a potentially limitless expansion of the interlayer distance of the clay mineral which results in a more uniform dispersion of the layered clay on a molecular level (col. 4, lines 16-22). Aggregation of the clay mineral is therefore prevented. The addition of the polar compound is necessary because the interlayer section can only accommodate one layer of the organic onium ion and thus limits the expansion of the clay mineral (col. 4, lines 13-15). This molecule is known as the first guest molecule. Given the advantage of increasing the interlayer section of the clay mineral for improved mechanical properties, it would have been obvious to one of ordinary skill in the art to utilize a polar compound as taught by Usuki et al in Kato et al '634's composition and thereby arrive at the present invention.

With respect to claim 4, Kato et al '634 does not disclose a polar compound in its composition and therefore does not disclose the presently claimed method. Usuki et al teaches

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that to further expand the interlayer distance, another molecule in addition to the first guest molecule and the onium ion, which can be the same as the thermoplastic resin, can be intercalated into the clay. This molecule is known as the second guest molecule. To produce this resin composite material, Usuki et al discloses that the organized clay can come into contact with the first guest molecule (polar compound) and the second guest molecule (thermoplastic resin) in any order (col. 1, lines 16-17). In other words, the resin composite material can be produced by adding the polar compound into the thermoplastic resin followed by the addition of the organized clay. Therefore, it would have been obvious to one of ordinary skill in the art to utilize the mixing order as taught by Usuki et al and thereby arrive at the presently claimed invention.

3. Claim 2 is rejected under 35 U.S.C. 103 as being unpatentable over Kato et al '634 in view of Usuki et al, as applied to claims 1, 4, and 5 above, and further in view of Kato et al (US 5,936,023).

Kato et al '634 is silent with respect to the addition of a phosphate polar compound to its resin composite composition. Kato et al '023 teaches that a plasticizer such as a phosphate ester, which is intrinsically polar, can be intercalated into an organized clay mineral to expand its interlayer distance (col. 3, lines 55-56). Therefore, it would have been obvious to one of ordinary skill in the art to use a phosphate as taught by Kato et al '023 as the polar compound in Kato et al '634 to be used to expand the interlayer distance of clay.

4. Claims 2 and 3 are rejected under 35 U.S.C. 103 as being unpatentable over Kato et al '634 in view of Usuki et al, as applied to claims 1, 4, and 5 above, and further in view of Patel (US 6,579,926).

Kato et al '634 is silent with respect to the addition of either a phosphate or a phosphite polar compound to its resin composite composition. Patel teaches that organophosphates can be utilized as fire retardants and that phosphites can be utilized as a thermal stabilizer and antioxidant (col. 5, lines 27-28) in a polyphenylene oxide composition containing layered organoclay (col., lines 34-37). It is observed that although applicant uses phosphate and phosphite for a different purpose than Patel, i.e., to improve mechanical properties, it "does not alter the conclusion that its use in a prior art composition would have been *prima facie* obvious from the purpose disclose in the references." See *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972). In addition, although Patel does not disclose if the phosphate or phosphite is bonded to the clay mineral, they are intrinsically bonded to the clay as taught by the presently claimed invention, i.e., the same combination of ingredients results in the same properties.

In view of the above discussion Patel regarding the usefulness of phosphate and phosphite in a polyphenylene oxide composition containing layered clay, it would therefore have been obvious to one of ordinary skill in the art to utilize a phosphate and/or a phosphite in the polyphenylene oxide composition of Kato et al and thereby arrive at the present invention.

### ***Conclusion***


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vickey Ronesi  
06/28/04



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